

Claims:

1. A communications system comprising: a plurality of tunable signal sources, each for generating a carrier signal of any one of a plurality of wavelengths; first control means for controlling said signal sources so as to sweep the wavelength of the carrier signal generated by each source through said plurality of wavelengths, said first control means sweeping the signal sources in staggered manner so that at any point in time the sources are generating different wavelength signals; a plurality of modulators, each for modulating information onto the swept carrier signal generated by a respective said signal source; means for combining the swept modulated signals and transmitting the combined signal; means for filtering the received combined signal to extract therefrom a plurality of component signals, a component signal being extracted at each of said plurality of wavelengths; second control means for controlling said filtering means so as to sweep the wavelength of each component signal extracted through said plurality of wavelengths, said second control means sweeping the wavelengths of the component signals in staggered manner in synchronism with said sweeping of the signal sources by said first control means, the wavelength of each component signal thereby tracking the wavelength generated by a respective said tunable signal source; and a plurality of demodulators, each for demodulating a respective said component signal provided by said filtering means thereby to recover the said information contained therein.

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2. A communications system according to claim 1 wherein: said means for filtering comprises a plurality of tunable filters, each for filtering the received combined signal to extract a said component signal at one of said plurality of wavelengths; said second control means controls said tunable filters so as to sweep the wavelength of the signal component extracted by each filter through said plurality of wavelengths, said second

control means sweeping the filters in said staggered manner in synchronism with said sweeping of the signal sources by said first control means, each said tunable filter thereby tracking the wavelength generated by a respective said tunable signal source; and each of said plurality of demodulators demodulates the signal provided by a respective said tunable filter thereby to recover the said information contained therein.

3. A communications system according to claim 2 wherein each said tunable filter comprises a pair of tunable sub-filters that alternately track the next successive sweep of the tunable signal source corresponding to that said tunable filter.

4. A communications system according to claim 2 wherein each said tunable signal source comprises a pair of tunable sub-sources that alternately generate the next successive sweep of that said tunable signal source, and each said tunable filter comprises a pair of tunable sub-filters each tracking a respective one of the pair of tunable sub-sources of the corresponding said tunable signal source.